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TECHNOLOGY & ARTMENT

AVIATION

The Oldest American Aeronautical Magazine

July 2, 1928

Issued Weekly

PRICE 20 CENTS



A flight picture of the trans-Atlantic Fokker monoplane "Friendship".

VOLUME
XXV

Special Features

NUMBER
1

The Eastman Flying Boat
Radio Equipment on the "Southern Cross"
Protecting and Finishing Aircraft Structures

AVIATION PUBLISHING CORPORATION
250 WEST 57 STREET, NEW YORK

Publication Office, Highland, N. Y. Entered as Second-Class Matter, Nov. 22, 1920, at the Post Office, at Highland, N. Y. under Act of March 3, 1879.

AERIAL TOURS

With all the major cities and many of the smaller ones building airports . . . with the air mail routes offering lighted streets and frequent landing fields . . . with more and more companies doing all they can to make their landing attractive to the air-farer, the aerial tour is a thing of the immediate future.

People will be telephoning the flying field, to inquire the cost and the time required to fly a group of enthusiasts to some sporting event—a championship fight, the world's series, big football games and so forth.

Business men who can take but a precious week or two for vacations will "club" for a plane to fly them to the mountains, lake and seashore resorts; in winter, to southern golf courses!

Officers of great corporations, making an inspection tour of factory branches, of sales territories, of buying sources, will want to charter a plane.

All this aside from any "de luxe" tours comparable to the present Mediterranean, Caribbean, or Round-the-World Cruises now in popular. Why not a tour of the Pacific Coast by air? Or Around-the-Lake? Or Yellowstone, Grand Canyon and the Rockies? Or the famous Gulf Coast?

It is certain that there will be a demand for this service, and the operator equipped with the planes to handle it will have the business, with all the advertising which will come from it.

For such service the Ford tri-motor transport monoplane is particularly suited. Capacity for twelve passengers and their baggage. Ability to go long distances without stopping. Cruising speed of a biplane only, at least. Three motors to ensure any possibility of a forced landing. And representatives of the Ford Motor Company everywhere in the country, to render whatever assistance or conveyance you may desire.

THE FORD MOTOR COMPANY

Division of

FORD MOTOR COMPANY

Dearborn, Michigan



THANK YOU for mentioning AVIATION



The Oldest American Aeronautical Magazine

Vol. XXV

JULY 2, 1928

No. 1

Dealer Territories

THE ADVANTAGES of closed dealer territories over open dealer territories have been argued pro and con many, many times and undoubtedly they will be argued many more times. Those in favor of closed territories base their argument on the belief that a dealer should not be hindered in his effort to obtain a full quota of business out of his territory. They claim that he should be allowed to develop his territory as he deems best and not be forced to lose a sale that he would eventually make, just because some distant dealer got there before him. In other words those in favor of the closed territory consider that the dealer is rightfully due sales, previous.

Those in favor of open territories claim that such is a sales situation. They feel that if Jones is permitted to make sales in Smith's territory that Smith will be made up the sales and will demand more extensive sales compensation, etc.

What appears to be a solution of this controversy and which should prove satisfactory to both parties is now being put into practice by a mid-western distributor. This distributor has each one of his dealers place a certain amount on deposit with him along with the purchase price of the first plane that they buy. He has assigned each one of his dealers what might be termed as a "closed territory." However, in the event that Jones sells a plane in Smith's territory the distributor pays to Smith 50 per cent of the amount of commission due, out of Jones' deposit. Jones is then unable to secure more planes until he has made up the deficit in his deposit with the distributor. In this way both Jones and Smith are prevented from a standpoint of closed territories, in view of the fact that they profit by the attempts of each other to make sales outside of his own territory.

Trans-Atlantic Pontoonos

THE OUTSTANDING feature of the recent trans-Atlantic crossing of the Fokker monoplane "Friendship", from the standpoint of aeronautical progress, was the fact that the crossing was made in a plane fitted with pontoons.

It has long been the contention of many, who are in a position to know, that the type of plane best suited for over water flying is that type which is capable of taking off from, and landing on, the surface of the water. That such types of planes have not been used in the past has been for the most part due to the fact that the land plane has a greater speed, a greater cruising

radius and can get off with a greater load. That is, of course, assuming that the power plant installations are the same. In the case of a land plane no change is made in the empty weight of the plane to take care of an extra load of gasoline. Whereas, in the case of the plane fitted with pontoons, the pontoons must be made lighter to compensate for the extra load else they will be too deeply submerged in the water to allow the plane to get into the air, regardless of the weight of its run.

An example of this is shown in the side view comparison of the Friendship and the "Southern Cross". Both of these planes are stated to be of the same design. Fitted with a landing gear the Southern Cross took off in three different occasions with a load of 15,750 lb. The greatest load that the Friendship could get off with was between 13,000 and 15,000 lb. Runs in order to do that, the plane had to be equipped with over sized pontoons.

What must be done to place a water plane on a par with a land plane on simple take off with heavy loads, etc., is something which engineers and designers must decide and prove. However, the flight of the Friendship may be taken as a start in the development of suitable trans-oceanic planes. Pilot Smith considered that the plane set out to accomplish the fine a three-engined plane, capable of landing safely on the water, across the North Atlantic. It was the first time that such a flight had been made and it proved whatever there was to be proved. Wherever there seems to be no reason why that flight should be duplicated until the safety factor of over water flying has been increased even more.

Changing Seats

THE MAJORITY of cabin planes are built with single controls but they are so stable that with proper stabilizer setting it is comparatively easy to let go of the controls, climb back into the passenger's compartment and have another pilot take the first pilot's place. For various reasons, especially when a plane is being disassembled, this is frequently done. The change, however, must be made with great care as there is considerable danger of the plane either striking a bad bump or of the pilot being clumsy and putting the controls in the climb in or out of the seat. Recently a pilot making such a change found himself with one hand on the rudder bar and his foot striking back in the passenger's compartment. Several other episodes of the wobbly nature have been reported and it is quite possible that several unexplained accidents have been due to carelessness in changing seats.

Protecting and Finishing Aircraft Structures

By THOMAS B. COLBY

Mr. Jackson City, Army Eng. Ser.

TO THE eternal credit of modern commercial aircraft manufacturers it can be stated that the great majority are heavily thinking and protecting their planes with time-tested products that give superior results against corrosion and decay. Cheaper products and less costly methods of finishing could easily be adopted that would not at once be apparent to prospective purchasers, but the skilled designers and builders are still interested in something better, and not "how cheap can we build our plane?" This

expense paid in large scale production will be of untold value as the new industry develops.

In the finishing of aircraft there are two fields to be considered, that of the exterior versus the interior. The Government is chiefly interested in utility, while no aircraft has a finish of durability is one of the big selling points for commercial planes. However, of late months, progressive contractors of military aircraft have seen fit to finish their machines just a bit better than the Government might require. We, therefore, feel justified in dealing primarily with commercial finishing practices in this article, because of their real durability and beauty, often superior to that obtained with other types.

Finish for Internal Structures

Steel Tubing Fittings—cords—Before assembling and welding this unit together the lag screws are drilled with 1/16 in. holes at points where connecting tubes join it together. After the welding is complete this leaves the entire interior of the tubing covered for free passage of air or liquid. All open ends are then sealed except one opening in one end of a lower lag screw and the other end of an upper lag screw, inserted, or, in some cases, then forced through under pressure until the entire interior is filled. The liquid in this allowed to drain back into the container and the open-



Stacking and drying in a modern deep room.

ing of interest, storing worth has brought aviation to the front with visible or noted signs and plans that warrant public confidence.

During recent months a well known manufacturer of home point has advertised extensively that "You can't put your hands with airplanes?" Neither can airplanes be adequately protected in this manner. Even though the cover may never see the internal structure of a machine, in which he daily trusts his life, he has implicit confidence in its strength and its covering of protection against deterioration.

Long years of experience by the Government and the vast air concerns interested in this important subject have brought forth methods well suited for specific purposes. For outside parts of a plane of best quality and value, and give much more trouble with decay or insects, which may be extremely useful to other requirements on the same machine. Only when properly designed houses are applied according to the specifications of the manufacturer of these products are maximum results obtained. Methods will be shown that have satisfied automobile builders cannot improperly be transferred to aircraft builders, though the



Workmen spreading the wing of a plane with Bergtholm's paint to keep out all moisture. The protective material is so dropped that it "sets up" on the walls of the tubing forming a seal, preventing wetting that will always remain closed. The manufacturer in this condition that its product can never deteriorate from the inside out.

Steel Tubing—cords—Next comes the protection of the exterior of the welded unit, which brings up the important fact that through staining is first necessary. By far the

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The Radio Equipment of the "Southern Cross"

By D. R. LANE

RADIO IN the sweet flight of the "Southern Cross" at many notable moments. First, of course, it enabled the crew to maintain a course in its field their whereabouts when darkness and storm obscured the heavenly bodies from which an observer might have been lost.

On at least one important occasion, when the film was making the world record Hawaii-Panama flight, a radio message announcing that the aircraft was in the vicinity of Hawaii and that the aircraft was in the vicinity of Hawaii, plus messages they

received from stations, and a shortwave set designed to maintain contact with a nearby station in San Francisco and another in Australia, which it did almost throughout the journey. It was this latter apparatus that made the record.

This set was a duplicate, almost, of the set operated by Alvin Karpis, master of the "Hindenburg" which set the distance record that closed the record of long-distance aviation upon the Dixie flight of last year: "S.O.S. We are in sight again..."

This set was a 50 watt 351 meter transmitter and weighed 4 lb. 14 oz. The long wave set weighed 16 lb. 6 oz. The two generators weighed 11 lb. This transmitter set, which was provided with a silk balloon to carry up its phosphor bronze antenna and a bottle of compressed gas for inflating the balloon, weighed 25 lb. Keeping this set, the entire transmitting equipment weighed only 54 lb. 6 oz. The receiving set, which was built together, weighed 20 lb. 15 oz. complete. Both the sending and receiving sets operated on the broad-band band-plate about 100.

The generators, Alvin-Duplex make, were of the induction type with a field excited by permanent magnets, the rotor winding and vacuum being stationary. By this construction it was possible to do away with all moving electrical contacts. The inductors were tested before installation at 50,000 r.p.m. The set was designed to operate with the pressure turning over from 500 to 1,500 times a minute



One of the Alvin-Duplex transmitting sets in its case.

interconnected with these stations, enabled them to find their position quickly and accurately—to "make a fix" on the radio-ray.

Even the apparatus aboard the Southern Cross set a record for continuous broadcasting from an airplane and another for long distance broadcasting from a plane. According to messages received from the fleet, it proved itself invaluable and durable, coupled with the fact that Capt. Hiram Keady of the Bureau's crew, renders it extremely likely that hereafter as very long over-water flights will be attempted without the aid of land-based radio stations.

Electrically, there was nothing very remarkable about the radio sets built by Keady & Keady at San Francisco for the Southern Cross. They merely embodied principles which have been well known for some time, though they did represent one of the first occasions on which these principles had been combined. From a construction point of view, however, they were decidedly unusual. First, they were built, except within narrow limits, to be simple and sound, they were simply built up to withstand virtually all shocks—anything, indeed, short of the complete wrecking of the plane.

These sending and three receiving sets were provided. As sets for the wave-lengths the sending sets were very simple, while the receiving sets were designed and constructed. The sending sets were a wave-length emergency set for use in case the plane was forced down on water, a commercial-length set to be used for communicating with ships and



An Alvin-Duplex generator used on the radio of the "Southern Cross."

but the usual speed of the generator shafts was intended to be 2,000 r.p.m. and the vacuum pump blades which drove these shafts were set to operate that speed.

These Alvin-Duplex sets were of the belt-driven type, except of aluminum metal. The propeller shafts were mounted on ball bearings. They drove, through planet-gear transmission, two rotors which were simply vessels of steel. The ball of each generator was supplied by

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The Taylor “Chummy”

A Two Place Monoplane Designed to Replace the War Surplus Training Plane or Serve as a Light Sport Plane

TATIAN BROS. Aircraft Co., Rochester, N. Y., formerly the Arrowing Airplane Co. of that city, is starting production on the Teyler "Champion," a two-place open cockpit monoplane powered with either a 100 hp. Kinner engine or a 90 hp. Ryan-Siemens engine. It was designed to replace the war surplus training plane or to serve as a light sport plane. The Kinner powered model weighs 950 lb. empty and carries a pay load of 180 lb., which is included in the disposable load of 550 lb., giving a gross weight of 2080 lb. With that load it is stated to have a high speed of 115 m.p.h. and a landing speed of 35 m.p.h.

Clark, Y Section Used

The Tupperware can has a high wall and short the flange and externally braced by three struts on each side. The bracing is of the X type, making for a very rigid structure eliminating wing drift. The wing is built in a conventional manner for four types of aircraft. It has a chord of 5 ft, a span of 3 ft in chord and 10 ft in span, giving a total area of 175 sq ft. Each panel is fastened in the corner section, which is part of the flange, by four nails, two in each span. The spars are of birch section with spruce back members and plywood web. The ribs are of the true type, with spruce back members and plywood web. The wing is manufactured with plywood at the joints. Double wing bracing is used to take the drag loads. All members have been designed to withstand the normal loads imposed, as well as to support stresses caused by vibration. The wing is covered with a 1/2-in. ply of plywood. The wing is shown in the oblique aspect. One interesting detail in the design of the wings is that a 30-gal gasoline tank is carried above the flange, in what would normally be the corner section. On each side are the conventional compression members with the wing ribs attached to them. The wing is shown in the oblique aspect so that it does not offer the appearance characteristic of a

wing. In addition, there is a three gallon tank in the fuselage.

The fundage is of interesting design, being wide enough to accommodate two seats side by side. It is constructed of welded chrome molybdenum and carbon steel tubing with the



A former model of the Taylor "Chummy" powered with a 30-hp. General engine.

wing supports forming part of the fuselage train. Two members in the side provide support each rear end in addition, the rear spar is supported by members from each of the upper longerons. The fuselage train is a rigid structure with no war housing. It is rectangular in shape with a wood kerf's deck in the rear housing a compartment large enough for two suit cases.

The engine is mounted on the nose in front of a 4 gal. oil tank. It is detachable and was designed to carry any engine up to 125 hp. Behind the engine compartment is a high

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The Taylor "Glenn" (Eum-Sung) on display at the DeWitt House

Tail Surfaces, Controls, Skid and Shock Absorber

Stress Analysis of Commercial Aircraft, Chapter Number Fifteen

By PROFESSOR ALEXANDER KLEMIN

David Greenberger, School of Economics

And GEORGE F. TITENBOM

Rate of the Economy of domesticity. How Domesticity

THE ANALYSIS of the major portions of the estuaries such as wings, landing gear, and fuselage have now been completed. It remains only to analyze the fuselage. In the title of this chapter to complete the analysis. This is considered a complete stress analysis as demanded by the Department of Commerce. It is also required that the drawings of each part of the plane may be submitted. It is not to be understood that the analysis of the wings and fuselage with those used in the airplane. Diagrams may not be seriously changed after the analysis has been made as this always means a redistribution of load which may put a critical load on some member which was formerly overstressed. If some slight change in landing gear was found advisable for a fitting at a point after the completion of the analysis, it may be indicated on the drawing and its possible effect estimated.

Analysis of Tail Surfaces

The tail surface of employees are not usually adaptable to rigorous analysis. The ribs are usually such a small cross-section carrying a portion of the load and as their sections conform to it is very difficult to compute their strength. The type of load and the workmanship coincide so closely to the strength or weakness of the structure that mathematical analysis will not give any light. The ribs are usually so small that they are broken up in the load up and test a simple analysis by loading it with sand bags or lead shot and test a few ribs. The negative loads per square foot of surface for different weight planes is listed in Table 27 of Chapter 13. The loads in this table must be increased 25 per cent, if the surface is to be tested. The surface should be supported as in the load up and to correct for wind resistance, from above and below. The load up of the load specified in Table 27 is a reasonably satisfactory

The main structural members of the tail surfaces may be analyzed to give a fairly close indication of their loads. For instance, the tail and rudder post are acted upon by a side force which tends to bend them. In addition the rudder post has a torsional load imposed upon it by the rudder control horn. The stabilizer spar is stressed in bending and the elevator spar in bending and torsion. These members will be discussed in due time.

In the fastings analysis for the maximum \bar{F}_m and random load we assumed that the frame acted three inches above the upper lagrange. Its magnitude was $25 \times 22.5 = 562.5$ lb, where 25 in. \bar{F}_m was the total area and 22.5 lb the load per

per sq. ft. The moment of this load about the upper flange where the tail post is fastened is $232.5 \times 3 = 877.5$ in. lb. When this load is small as it is in our case the tail post is designed to take it all and the rubber post is designed for tension only. Let us investigate a $\frac{1}{2}$ — 805 tube for the tail post.

$$\frac{W_y}{I} = S = \frac{667.5 \times 375/2}{9816} = 67,000 \text{ lb./sq. in.}$$

For mild carbon (1025) steel the allowable load is 25,000 lb./sq. in.

M. R. = 58,980/47,000 = 1 = 15.
This tube is therefore strong enough for the tail post.

We will now investigate the roller foot which is designed

by the tension level of the rubber. The wire of the rubber is close to 2 mg. N. The total load acting on it is $9 \times 22.5 = 202.5$ N. This load is distributed over the entire rubber surface from the rubber post back to the trailing edge. However, the load at the trailing edge is somewhat less than that at the rubber post. It is usually assumed that the center of pressure is at 48 per cent. of the distance from the leading to the trailing edge. The load of 202.5 N acts at this point, giving a moment load on the rubber post. The chord of the rubber is 30 mm. The moment is $48 \times 202.5 = 9720$ mm. N. The theoretical stress at the back of the rubber is the moment divided by $30 \times 22 = 2430$ mm. N. Reference back to Fig. 58 and the paragraph on tension in Chapter 1, we can design a tube to take this moment. Let us investigate a 3/8" - .002 in. tube.

$$\therefore \text{in } M \text{ at } z/2 \text{ in } \frac{2400 \times .375/2}{\dots} = 35,000 \text{ lbs. per sq. in.}$$

in, the required stress. For this value the D/S is 375/665 =

11.5. Referring to Fig. 4b the allowable stress for 6055 steel is 40,000 lb per sq in. for a D/d of 13.5. This one value is then satisfactory. Its $M/S = 40,000/28,960 = 1.38$. (The main standard numbers of the vertical ball surfaces have now been derived.)

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The Eastman Flying Boat

New Two Place Boat Is Powered with an 80 Hp. Anzani Engine and has a High Speed with Full Load of 75 M.P.H.

By JOHN T. NEVILL

QUANTITY PRODUCTIONS of the Eastman flying boat, the smallest model of which was on exhibit at the All-American Aircraft Show held in Detroit, is planned within the next 80 days, according to J. H. Eastman, one of the designers of the boat.

The present model, Mr. Eastman said, has had approximately 70 hrs. in the air, and has proven its air and water qualities. The boat was designed by Eastman and Tom Towle, and built in the factory of the Eastman Eastern Laboratories of Detroit.

In speaking of the Eastman flying boat, Mr. Eastman said: "Our boat was designed to fit a very definite gap in present airplane production, so there are no small flying boats being manufactured anywhere in the country. This particular model is designed primarily for sport and training purposes. One of the main purposes followed in the design was to obtain an unusual degree of stability and ease of handling. This was obtained through unusually large control surfaces, a very long tail and the placing at the center of gravity somewhat farther forward than customary. The design of the hull-section was related not so much, during take off, the tail is lifted as with a land plane, whereas the tail of flying boats usually has to be held down when taking off. This feature contributes somewhat to the excellent take off characteristics of the boat. The boat has been down level, checked and glided, with loads of the controls, and steeply banked turns have been made by one of the builders alone. Conversely, turns can be made without use of the controls, which, with the wheel steered control, suggests a tendency to driving an automobile. The boat has very pronounced stability in all three planes and is not unusually sensitive to bumps or sea."

The Eastman flying boat may be called a two plane, because

glass, outboard type, the upper, or main wing, having a span of 34 ft. and the lower, a span of 22 ft. Both wings have a dihedral of 110 deg. Although the trailing edges of both wings, one of 45 in. above the other, are flush, the upper wing projects 30 in. forward of the lower, giving the plane a large stagger. The wings have no angle of sweep.



Front view of the Eastman Flying Boat.

since, although the bottom of the boat has a negative hock-down angle of five degrees.

Clark Y airfoil section is used on both upper and lower wings. The upper spans are of box section with tapered square keels and 45 deg. 3 ply Hushbolt ribs. Drag trailing in double, both wings being driven through to the lower wing from the upper. All structural wing fittings are of RAK 1628 steel and designed to avoid passing over the wings with both bolts. Ribs in both wings are Warren truss made of spruce with aluminum plywood gussets. Glassin glass is used on all wind joints. The landing and trailing edges of both wings are of aluminum sheet metal while the tips are made of several thin of wood. Type no the

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Action picture of the Eastman Flying Boat landing on the water.

Attracting the Passenger

Some Novel and Effective Methods Used by the Chesapeake Aircraft Co. to Induce the Layman to Take to the Air

By WALTER E. HURTON

NOVEL METHODS of attracting passengers, combined with ample provision for the comfort of passengers, are among the services of the Chesapeake Aircraft Co., operating at Logan Field, Baltimore, Md.

The passenger station and field headquarters building, spread out in the spring, contains many features which might well be copied by other airports. A comfortable lounge room for persons awaiting their turn in the planes, a ticket office, field manager's office, start room, and a special equipment and lounge room for students taking flight instruction are provided. On the roof of the building is a observation platform from which the entire field can be seen. This is used in stormy flights and is visible observation. On each side of the station is a covered open waiting room which will permit visitors to watch field activities in comfort. A seasonal admission is charged for use of the site. A heavy wire fence prevents visitors from crowding too close to planes.

In front of the station is the dispatcher's booth. Purchasers of flight tickets register at the booth and then await the calling of their number. The booth serves also as the operating point for one of the most effective "passenger prizes" that the company is using. This is a bookkeeping system which effectively tells the record of actual visitors who they should see before leaving the site. The system consists of a number of bookkeepers placed at strategic points about the station and field, a mobile room containing, and a microphone attached in the dispatcher's booth. The dispatcher



Representation of the automobile windshield sticker furnished by the Chesapeake Aircraft Co.

re-announcement keeps up a running talk into the microphone, talking about the wonderful view that can be obtained from one of the planes, relating interesting bits of information about the pilots and planes, telling just how to proceed in obtaining tickets, and the like. Conversation with passengers who have just returned from a flight is broadcast. "How did you enjoy the flight?" the dispatcher will ask. "Fine!"

so no special experience is necessary to obtain. This seemingly incidental talk serves to induce the listener that flying is not quite so dangerous or disagreeable as he may have heard. The result is more tickets sold.

The Chesapeake Aircraft Co. is now operating 13 planes. These include a Fairchild Cubas Monoplane with a Warfield engine, an Travel Air open cockpit plane with OX-5 engine,



Representation of poster given out to passengers to lead to their flights

one Travel Air with a Hispano-Suiza engine, and two Cessna planes used for training students. The Hispano-Suiza powered Travel Air is used for the best experience service. The Fairchild, nicknamed the "Blue Harrier," is the ship of the fleet. It is used generally for long passenger flights. Recently it was fitted with an electrical amplifying system so that the pilot can converse with the passengers during a flight, pointing out interesting features of the terrain passed over. The system is simple, consisting of a microphone for pilot, a set of loud telephones for each passenger, and a suitable amplifier. In an action conversation entirely satisfactory is made of the state of the motor. Then, of course, is another aid in obtaining passengers.

Need Advertising Means Used

Several novel advertising means are being used to attract visitors and passengers to Logan Field. It happens that the number of tourists visiting Baltimore is, comparatively, not great, so that a large portion of the passengers must be obtained from nearby local sources. Advertising is designed accordingly. Tourists are reached largely by means of placards and similar devices, and plans have been devised for the coloring of taxi-cab drivers, hotel clerks, and the like as special agents for the distributing of tickets and information. This system, when completely organized, will be similar to that in use in Washington, D. C.

Local prospects are reached through newspaper advertising, posters, contact with persons who already have taken flying lessons, and the like. Those who already have taken and enjoyed air trips contribute one of the most powerful

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Find Various Uses for Transparent Pyralin

In Many Aircraft Parts and Instruments

PYRALIN, a transparent product which is strong and gradually elasticable, has been found to have many applications in the aircraft industry. The product has been used in aircraft for many years, one of the first uses being in the manufacture of windshields, doors, and windows. Pyralin is only half as heavy as glass, but the sheets of this material 1/16 in. in thickness, offers the necessary strength and rigidity.

This product is also used in pressure-test gauges, it being said that gauges will not affect it and that gauges made from it will not crack. Manufacturers of these gauges are the Consolidated Aircraft Co. of Buffalo, N. Y., the Bueing Aircraft Co. of Seattle, Wash., and the Bell Aircraft Co. of Mayfield, Mich. Pyralin protectors are also employed on the navigation lights placed on the wings and tail of the planes. These are made by the Schneider Steel Works of Jersey City, N. J., F. H. Lovell & Co. of Arlington, N. J., and the National Marine Lamp Co. of Fenwick, Conn.

A safety glass for airplane cabin windows has lately been made by placing a sheet of pyralin .002 in. in thickness between two layers of plate glass.

Philadelphia Aircraft Co. Now Operating

Doydetown Field in Swallow Distributor

W. H. WILHELM, president of the Philadelphia Aircraft Co. has started operations on his recently acquired 80 acre airport on the Doydetown Farm at the Broom Highway, one mile west of Doylestown. Swallow airplanes are being used for passenger loads, taxi service, and aerial photography.

The company has secured the distributorship for three planes, OX-6 Swallow planes, the territory including Pennsylvania, Delaware, and Maryland.

The company has opened an office and classroom at 2331 Arch Street, Philadelphia, and has modified 38 students in its first general school class. George J. R. Haver of the Naval Air Station at Rockaway, L. I., who formerly was an instructor in navigation at Tusculum University, this city, has been chosen as the new company's chief instructor. Classes are now held on Tuesday and Friday nights.

The company has spent two months preparing the airport and its surroundings for flying activities. The field will be dedicated soon and will be known as the Doydetown Flying Field. Construction has been started on a 64 by 80 ft hangar that is expected to accommodate four planes.

Conducting Arizona Aerial Survey to Map

Beauty Spots and Encourage Aeronautics

A COMPLETE aerial and photographic survey of the State of Arizona is being conducted under the auspices of the Arizona Republic by Rex Whitton of Phoenix, who recently purchased the Earl Van Dusen Airport at that city, Bill Knapley, formerly of San Diego, now pilot of the Earl Van Dusen Airport, and E. D. Nissenau, aerial photographer.

The purpose of this project is to obtain characteristics views of the beauty spots of Arizona, and at the same time to encourage aeronautics for the equipping of standardized airplanes in the cities and towns of the state.

Walter A. Morrison, commercial aviation agent, stands ahead of the scheme and arranges each landing several days in advance, while Greville Rodden acts as pilot for every step with a laboratory car completely equipped for any possible repair or replacement.

Clean Design a Feature of Newly Built

Savoia-Marchetti Model 63 Flying Boat

A BOMBOUT test runs the Savoia-Marchetti Model 63 flying boat, Milan, Italy, completed the first Savoia-Marchetti 63 flying boat. While the model 63 used by the Savoia-Marchetti Co. to this country, it has only a single main deck fitted by the two main deck doors expanded below the wing. It is of extremely clean design and appears to be very efficient. The monoplane wing is full overhead at the top of the hull, and mounted above this are two fuselage "humps" 500 hp engines in tandem. As on the other Savoia-Marchetti boats, the tail surfaces are mounted on two large struts and braced by two cables from the wing.

A High Speed of 130 M.P.H.

It is said that this plane, which has a span of 89 ft and a wing area of 1528 sq ft, has a weight empty of 8819 lb and a maximum weight of 16000 lb, giving a gross weight of 15,220 lb. The normal cruise speed is 108 m.p.h. High speed and the plane is said to have a high speed of 130 m.p.h. and a cruising speed of 100 m.p.h. The landing speed is said to be 62 m.p.h.

The wing is attached to the fuselage in such a manner as to be in a slight angle. It is built up of three main spars and the main ribs, the whole being covered with plywood and then fabric. In place from it has a lighter layer because of the great layer in thickness caused by the main spar construction. The wing is set at a slight dihedral angle. It is said that the construction is such that the wing will float about 100 ft. It is divided into a number of weight compartments having a displacement will come out of the total weight of the plane. The struts are of the hollow type and controlled by cables from the fuselage.

The single tail fin of all wood construction and is quite short, supporting the tail surfaces on a metal structure. The pilot's cockpit is at the front in the left side. The main cabin, which is 19 ft long, 20 ft wide, and 6 ft high, is fitted for 19 people and baggage. In the rear is a lavatory and a radio room. At the top is another cockpit allowing for a rear person in the case of military use, or something else to make the machine use as the machine.

New BMW Powered Dolphin III Flying

Boat Being Produced by Dornier Firm

THE DORNIER Metallwerke, Friedrichshafen, Germany, is producing a new tractor flying boat called the Dolphin III. Following the new Dornier construction, it is a high wing monoplane with external wing supports from a small spar on each side of the hull. This spar has an internal spar and provides more lift in addition to giving better lateral stability on the water. Two passengers are carried in a cabin under the wing and above the hull. There are no windows in the two ports which are provided with dual controls. Above the wing is a BMW VI 450-horse hp, water-cooled engine. The hull is of all metal construction, it is constructed with the usual Dornier design. A number of these have been completed and are in service on the inland waters and rivers of Germany. The first machine was used at the Dornier Aero-Lloyd.

The following characteristics have been submitted:

Weight with normal load	5140 lb
Weight with maximum load	5800 lb
Cruising speed	93.5 m.p.h.
Maximum speed	107.5 m.p.h.

Bell Telephone Laboratories Undertaking Radio Experiments With Fairchild Plane

WITH the delivery of a Fairchild plane and the addition of a pilot to its staff, the Bell Telephone Laboratories, Inc. of New York have taken two definite steps in the recently announced program of radio development for aviation. The plane is a cabin monoplane built by the Fairchild Aircraft Manufacturing Corp. of N. Y. It is a 3-engine, formerly a cabin in the Air Service.

Being firm in a broad study of radio transmission between ground and planes, the Bell laboratories will have officers staff with the effectiveness of various types of antennas and with the effect on transmission of the plane's height above ground. In this work, the Laboratories' experimental station at Westport, N. Y., will be used for transmission. Development in the laboratory is reported already well advanced as the necessary transmitting and receiving apparatus and tests in the air will begin shortly.

To Develop Better Flying System

More study is given to an outstanding need of non-military aviation, one of the problems to receive early attention will be the development of a system by which the pilot can determine his bearing from various points on the ground. Means for the transmission of weather bulletin and other information to planes will also be developed.

The plane is now designed to accommodate five persons. The seats for passengers have been installed, and in this space will be installed receiving apparatus for a full-time receiving system. The electrical system of the plane will be installed carefully to avoid interference from the engine's or other causes. Lamps and fans have been provided in person right space. Recently, the plane will be tested at Westport, N. Y., where the Bell Telephone Laboratories are located. This is within a few minutes' drive of the laboratory at Whippany.

Capt. A. E. Brooks, the Laboratories' pilot, has had a distinguished career in the United States Army. During the World War, Captain Brooks was awarded the Distinguished Service Cross for his gallantry in the air. He is the holder of the B.U.C.C. and of several citations.

S. E. Saunders, Ltd., of the Isle of Wight Completes Medina Commercial Flying Boat

A BOMBOUT test runs the S. E. Saunders, Ltd., built and assembled by S. E. Saunders, Ltd., of Wight, England, completed the Saunders "Medina" four-engine commercial flying boat.

It is of all-wood construction and is built on a conventional hull, as in some of the other boats, it is the hull which is the main support of the wings. The hull is a greater span than the upper one. A few of the wings are used between the wings for bracing and the upper wing has a slight dihedral, while the lower wing has no dihedral. The engines, with tractor propellers, are mounted on the under surface of the upper plane on each side of the hull. The hull is built the lower wing and has a large cabin fitted to carry 30 passengers in addition to the crew, who are in the open. The wing is a fairly thin section with a reversed camber at the leading edge. The tail section, including an adjustable stabilizer mechanism, is supported only by a pair of struts.

The engines are two Bristol Jupiter series VI or similar units, developing 600 hp. They are mounted on rigid plates attached to the front spar of the upper wing. The lower part of this plate is hinged to the rear spar by a

adjustable member which carries the fuel tanks. This arrangement makes a gravity fuel possible and at the same time the tank can be removed without disturbing the structure. A small gas starter is carried in the tail for starting the engines.

The hull has straight sides with a narrow V bottom. The deck and sides are constructed of layers of "Coromix" plywood made on the firm's factory. The hull is painted with masonry material with short coats. To the nose



Front quarter view of the Saunders "Medina"

of the hull is a large compartment entered by means of a hatch which is closed when in flight. Beyond this is a compartment containing the gas starter and most of the necessary equipment. The rear of this is the pilot's cockpit with side-by-side seats for two men, one of whom is the navigator. Separated by a bulkhead with a door to it, is the rear, the passenger's cabin with the seating arrangement such that the passengers face each other, giving excellent air flow. All of the cabin is a lavatory and a ladder in the deck, while beyond this is a compartment in which baggage is kept.

Performance and other specifications are not available at this time.

Production of 25 Propellers Daily Planned

By New Supreme Company, Wichita, Kan.

TO MANUFACTURE propellers in the purpose of the Supreme Propeller Co., just organized in Wichita. Actual work of making propellers will start in soon as the company receives its charter. Propulsion and transportation are George H. Sandberg, president; C. A. Soil, vice president; A. B. Smith, treasurer; W. J. Stone, secretary; and C. A. McClellan, counsel. Present plans of the company will be the attainment of a daily output of 25 propellers.

W. J. Stone, the propeller designer, last 14 yr., will have charge of the manufacturing end of the business. The first type of propeller will be made from Kansas black walnut. Later, steel propellers of all sizes will be manufactured.

Berry Brothers Offering Berryloid Dope

Colors Which May be Applied by Brush

BERRY BROTHERS, INC., of Detroit, Mich., aircraft finish manufacturers, recently introduced a new line known as Berryloid Dope Colors especially for small aircraft repairs, and general owners who have not the necessary spraying equipment to apply a finish in this manner. The new dope colors may be applied with a brush.

These colors are new available in 36 standard shades of Aircraft Berryloid. May other colors, furthermore, are made up when the quantity desired justifies the expense.

First DH 61 Plane Powered by Jupiter

Engine Delivered to Australian Company
THE FIRST DH 61, or "Cuckoo," constructed by the De Havilland Aircraft Co., Ltd., of Edgeware, Middlesex, England, has recently delivered to McIlhenny & Co., Ltd. in Adelaide, South Australia. It is a single engine monoplane powered with a 450 hp. Jupiter engine. With this power plant, as a land plane, it is stated to have a high speed of 135 m.p.h. and a landing speed of 25 m.p.h. carrying eight passengers and 600 lb. of baggage or express, giving a total weight of 4090 lb.

One of the interesting features of the design is that the pilot is situated in an open cockpit behind the passenger cabin between the wings close to the center of gravity. The fuselage is of wood construction built up into main which



Side view of the DH 61 (450 hp Jupiter).

are bolted or screwed together. There are four spars in position with a slot of three ply construction and a covering of fabric. The engine is mounted at the nose on a derrick-like plate supported on steel tube members attached by four bolts. In this way the complete engine installation can be removed with a minimum of effort. An 80 gal. gasoline tank feeding to the engine by gravity is carried in the center section of the upper wing. The oil tank is integral with the cooling behind the engine and the oil cooler is mounted directly on top of the tank.

Behind the engine compartment is a passenger cabin 46 in. wide with sea and extending the width and integral with the forward bulkhead. The seat is suited for two or three people and under it is provision for the storage of baggage. At the rear of the cabin are two seats, one fixed and one sliding to clear the cabin doorway. Between these two are two removable chairs. The cabin provides for six people normally, though eight may be carried comfortably. The walls and the walls of the cabin are upholstered with leather padded with sponge rubber. Behind the cabin is the pilot's cockpit fitted in, in such a way as to protect the pilot and yet provide good vision.

Wings of Wood Construction

The wings are made of wood construction with metal compression ribs. The ribs are made with a D-section fit at the spars and are fastened to the fuselage and leading edge, which are of metal. The wings are of two bay design, and are constructed in such a way that they can be taken without the use of any auxiliary jigs. The entire section of the upper wing is slightly higher than the other panels of the wing so that, when the wings are folded, the leading edges of the outer panels pass under the main wing, avoiding any complications in the design of the corners of the outer panels. The leading gear is of the conventional split

type with rubber dam in suspension to absorb the shock. The shocks are carried well forward, reducing the possibilities of wing over.

The main specifications on the DH 61 are as follows:

Length	30 ft.
Wing span	33 ft.
Wing area	613 sq. ft.
Engine area	56 sq. ft.
Engine area	41 sq. ft.
Engine area	27 sq. ft.
Engine area	63 sq. ft.
Engine area	15 sq. ft.
Engine area	3500 lb.
Engine area	170 lb.
Engine area	1700 lb.
Engine area	4090 lb.
Engine area	191 lb./sq. ft.
Engine area	125 m.p.h.
Engine area	135 m.p.h.
Engine area	125 m.p.h.
Engine area	25 m.p.h.

New Bombing and Aerial Gunner Medals Are Awarded to Army Air Corps Officers

NINE OFFICERS of the Army Air Corps, stationed at the various bombing and aerial gunner schools at Langley Field, Va., in 1934, 1935, 1937, and 1938, were recently presented with newly authorized gold medals by Assistant Secretary of War F. Symes Davies. Distinguished Aerial Bomber and Distinguished Aerial Gunner are the distinctions. Five other officers, unable to be present at the ceremony, were also named for the medals.

The ones who received the medals were: Louis C. Shanks, Douglas Airfield; James E. Parker, France Field; Carl Kees, Robert W. Douglas, Jr., France Field; Harold L. George, chief staff of Air Corps, Washington; William T. Lemen, Kelly Field; Tom Korte E. Fendler, Kelly Field; Edward E. Hanson, chief staff of Air Corps, Washington; Alfred L. Puryear, Langley Field; and Sam L. Reed, Kelly Field.

The five other officers named for the citation were: Capt. Hugh M. Hunsicker, Selfridge Field, Mich.; Louis Harold C. King, France Field; Louis M. Morris, France Field; W. B. Carter, Brooks Field, Tex.; and James T. Curry, Fort Cavazos, Tex.

Nicholas-Bentley Company, Marshall, Mo., Awarded Scully Helmet Distribution Rights

SOLE DISTRIBUTION for the Scully Helmet from the Rocky Mountain end, has been awarded to the Nicholas-Bentley Company, airplane supply house of Marshall, Mo., according to an announcement of Harold Nicholas, president. The exclusive rights are for the entire line of Scully Helmets, Inc., San Diego, Calif., featuring seven all metal type helmets. Recently, the E. B. Meyers Co., manufacturers of the Meyers-Lessor Supply, appointed Nicholas-Bentley Co. as distributor of its goggles.

Other companies the supply house represents as distributor include such famous names as the Standard Aviation Products Co., the Pinedale Products Co., the John Marshall Co., the Phoenix Fibers Co., the Pioneer Instrument Co., and the Consolidated Instrument Co.

COMING

The Nicholas-Bentley Airplane Co., Inc., together with Walter H. Barling, aeronautical engineer of international reputation, will soon have an important announcement to make to the aviation world.

The conception of aircraft design, construction and appearance will rise to a newer, higher level.

Performance, stability and safety will assume a new significance—aviation will then be measured in new day terms.

Watch for this announcement—and set your standards high.

NICHOLAS-BENTLEY AIRPLANE COMPANY, INC.
MARSHALL, MISSOURI

REVIEWS

The book Department Aviation, vol. VIII, pt. 2, New York City, 1927, is a study of the most modern aircraft, and is a valuable reference work for the aviation engineer or aeronaut.

N.A.C.A. Report No. 204. The Comparative Performance of Basic Type Aircraft Engines Superchargers as Affected by Change in Impeller Speed and Displacement by Martin Weir and Edward E. White.

Results of tests made by the N.A.C.A. on three units of basic type aircraft engines superchargers. The impeller construction and diameter of these engines were the same, but the impeller differed, giving different displacements. The information obtained serves as a basis for the estimation of the individual effects of impeller speed and displacement on performance and of the comparative performance when speed and displacement are altered simultaneously to meet definite service requirements. When comparing the performance of different units of engines whose impeller speeds are so related that the same service requirements are met, it is found that the individual effects of speed and displacement are considered to be large extent and the only considerable differences in the efficiency of the power losses which decrease with increase in the displacement and the accompanying decrease in speed. This difference is small in relation to the net power of the engine supercharger unit, so that a supercharger with such impeller may be used in those applications where the speed available is very limited without any appreciable sacrifice in performance.

An Approach to Winged Flight—By John D. Barden, Dal glis Press, England, 1927. 34 pages. Illustrated.

A systematic compilation by the author of winged flight, including the weight and number of insects and birds. It includes data on the velocity of birds and insects and, in addition, a mathematical investigation of birds as a proposed device for the propulsion of the flying of a winged man.

Technical Publications Received

N.A.C.A. Technical Note No. 267—A Dangerous Engine Landing Condition, by Thomas Correll, Langley Memorial Aeronautical Laboratory.

N.A.C.A. Technical Memorandum No. 446 and 447—Theoretical Problems Relating to the Safety of Aviation, by J. Schuler, Parts I and II. From "Revue Technique" No. 43, of the "Revue Technique de l'Industrie de l'Aéronautique," June 13, 1927.

British Air Ministry Reports and Memoranda No. 1218 (The 2011)—A Survey of Propulsion Machinery below the Hull, with an Abstract for Designers' Use, by S. D. Gies, M.A.

Thames of Stockholm, Department of Commerce, Technical Paper No. 367—Effect of the Testing Method on the Determination of Curvature Resistance, by H. S. Eklund and K. G. Olofsson.

N.A.C.A. Technical Note No. 268—The Erection on a Steel Bottom Where Water Contact with Water at High Speeds, by H. C. Richardson, Bureau of Aeronautics, Navy Department.

Air Corps Intelligence Circular No. 466—Wind Tunnel Test of U.S. Spiral Model of the Material Division Head Observation Airplane (Langley Research Report), by E. K. Yates and M. A. Rando, Material Division, Wright Field.

Air Corps Intelligence Circular No. 611—Research Developments in Aircraft Engines (Power Plant Research Report), by F. H. Stenstrom, Material Division, Wright Field.

Kreider-Reisner Aircraft Co. Establishing A Company Airport at Hagerstown, Md.

KREIDER-REISNER Aircraft Co., Inc., of Hagerstown, Md., has recently acquired a tract of land for an airport. It is located on a paved highway 3½ mi. north of the Kreider-Reisner Airport and four miles north of the business district of Hagerstown.

Challenge airplanes which are built by the Kreider-Reisner concern will be assembled at the field, service facilities will be available, and ground maintenance work will be carried on from the airport.

The airport site contains approximately 50 acres and is very suitable, lying in the center of a wide valley. The only obstruction is a telephone line on the far side of the paved road, and this will probably be lowered.

At the present time there are two runways in condition to be used. One of these runs north and south along the east side of the field and is approximately 2000 ft. long. The other is east and west near the south boundary of the field and just in front of the hangar. The entire airport design will not be used during the entire year.

A 62 x 60 ft. hangar is nearing completion. It is of frame construction with an arch roof and will have a concrete floor. It is planned to increase the size of this larger hangar activities at the airport fairly soon.

Gasoline, oil, and service will be available at the airport. A crew from the Kreider-Reisner factory will be stationed at the airport to erect new planes as they are finished out from the factory. Commercial flying, including stunts, instruction, passenger carrying, etc., will be carried on.

C. D. Stearns New Schoenostadt Manager Of the Colonial Western Airways, Inc.

APPOINTMENT OF Charles D. Stearns as Schoenostadt manager for Colonial Western Airways, Inc., was announced recently by W. T. Lyman, traffic manager of the company. Mr. Stearns is maintaining an office in the Van Dusen Hotel, Schoenostadt, N. Y. He has had wide experience in transportation work, having been affiliated with the Western Steamship Line and the American-Canadian Line for six years. He is a graduate of Phillips Andover Academy.

H. F. Wood, whose appointment as Capital District manager of Colonial Western Airways was announced in a recent issue of AVIATION, has established offices in the York Hotel, Albany. Wood retains the transportation field from newspaper work, having been connected with publications in Madison, Wis., Buffalo, N. Y., and Albany. He served as correspondent with the Albany Times Union. Wood is also secretary of the Albany Air Board. He was educated at Cornell University.

Mail, Express, and Passenger Business Increased on N.A.T. Lines During May

AIR MAIL, air express, and air passenger business on the National Air Transport, Inc., lines between Chicago and New York and Chicago and Dallas showed a steady increase during the month of May as compared with the preceding month.

During that month, N.A.T. planes handled 64,757 lb. of air mail—approximately 3,000,415 letters, as compared with 58,383 lb. in April, or an increase of 7,374 lb. Air express for May totaled 7,791 lb. as compared with 4,950 lb. in April, an increase of 2,841 lb. Forty-two passengers were handled during the month as compared with 36 in the previous month, an increase of 36 people.

The enterprise of "Lorraine" is an assurance of constant progress toward more powerful and more reliable aircraft.

More than 5,000 engines are in service through out the world. They have been fitted to all the different types of planes and have established themselves through their remarkable reliability.

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SOCIÉTÉ LORRAINE
Fondéeur et Directeur Statut de l'Etat Français

Les avions Lorraine de l'Armée de l'Air sont en service depuis le 1er mai 1927

MERCI POUR les commandes AVIATION

Seems Airways, Inc., to Open a 36 Hr. Chicago-West Coast Air-Rail Line in July

AIR-RAIL SERVICE between Chicago and the Pacific Coast is to be inaugurated by Seems Airways, Inc., in July, according to an announcement by Lawrence Hamilton, president of Lawrence Hamilton & Co., investment and finance corporation, and treasurer of the Seems Airways firm. With the new system, a round-trip Chicago-West Coast, Los Angeles in 36 hr.—a saving of 24 hr. over the old all-rail route.

Shoppers, according to the planned schedule of the Seems company, will leave Chicago at the evening and arrive next morning in Kansas City, Mo. There a passenger would board a plane, fly to Las Vegas, N. M., take a second plane to Phoenix, Ariz., to the Grand Canyon, and at one of the latter points would transfer to the train that left Chicago a day before its own train to Kansas City. A stopover in this train would bring him to the Pacific Coast next morning. A day of flying in that scheduled between two overnight train rides, resulting in a saving of 24 hr. and in a comfortable crossing by air of the last section of the route where hot and sultry weather usually prevails.

The return trip from the Coast is to be made in the same manner. The passenger arriving in Arizona by sleeper from California will continue his journey by plane to Kansas City, where he will finish his trip to Chicago by train overnight.

The new service is to be begun in July with a scheduled service over the coast, according to Hamilton, with equipment to the traffic demands. The company is considering the use of a twin type craft, such as a Handley Page or a Fairchild twin monoplane, for the Kansas City-Las Vegas section of the line. For the Las Vegas-Airport leg, a section of higher altitude biplane—Seems Airways has a Fairchild biplane powered plane in mind.

Passenger from the Coast would reach there from Chicago at Las Vegas, where well-timed transfers would change planes to continue their journey in the craft just left by scheduled passenger.

At present it is planned to charge \$200 over the air section of the route. This has been pointed out as less \$50 less than the regular rail fare.

Seems Airways, Inc., at present operating neighborhood tours and one-day city trips in the vicinity of the Grand Canyon, Ariz. Two 12 passenger Ford planes are being used in the service.

Seems Airways, capitalized at \$200,000 for its new service, is headed by J. Parker Vassar. H. Edith Rowland of the General Electric Co. is vice president, Lawrence Hamilton, as previously mentioned, is treasurer, and James E. Reese, Jr., is assistant engineer. Among the directors are William D. Street and Ralph Howe.

New Cross Country Taxi Service Offered By Yellow Cab Airways, Inc., of Des Moines

THE YELLOW Cab Airways, Inc., a successful airplane service concern, has been formed in Des Moines.

This new company will operate a West Via, Travel Air, and a Monocoupe. During the middle of July it will take delivery on a Fairchild main plane powered with a Veece engine. All planes are piloted by the experienced Yellow Cab pilots, yellow wings and black badges.

The concern is incorporated under the laws of Delaware with an authorized capital of more than \$200,000. It is said to be the most potent and powerful expansion yet launched locally to serve Des Moines a deluxe plane on the air map of the country.

Harold Best, head of the local Yellow Cab company, is president. Alfred Press of the Press Electric Machine Co. is vice president. Al Cohn, local Chevrolet dealer, is secretary. John Shuler, local real estate, is treasurer. The board of directors is made up of the officers together with Paul O. Johns of the Mayfield Publishing Co., H. L. Sherratt of the Sherratt-Watson Mfg. and W. W. Wagoner of the Register and Tribune.

The primary object of this company will be a cross-country taxi service. Passengers hope and student instruction will be offered. In addition to these lines Best said the company will be in a position to go after air mail contracts and express business when the service is expanded in Iowa.

The company has also assumed dealer rights under the Campbell International Aeroplane Co. of Madison, Ill., for the Monocoupe and Traveler planes.

F. C. Anderson and Larry Olsen W. Best have been employed as pilots for the new company. John W. Calkins of Waterloo was employed to fly the Monocoupe which was ordered in the Iowa Good Will Air Tour.

Officers of the company declared that the entire official personnel of the new Airways concern are enthusiastic in their belief in the future of aviation, and expressed the belief that this attitude and skilled activities are destined to become one of the city's important industries.

Airport on Terminal Island, Los Angeles Harbor, Calif., is Christened Allen Field

ALLEN FIELD is the name by which the new airport on Terminal Island, Los Angeles Harbor, will be known in the future, following its recent christening in honor of Pres. Walter H. Allen of the Board of Harbor Commissioners.

Plans were to use a large portion of the field, the 2000 ft. runway, 300 ft. wide, at each end, and the 500 ft. landing short for airplanes, has been granted in the United States Navy. Improvements on the field were completed in a cost of \$50,000.

While the Navy will make extensive use of the field, it is also open to the use of private and commercial planes of other land or water type. Since the field is given to the order of harbor activities and is well equipped for any type of aircraft traffic it is felt that it will shortly become a popular stopping point for Southern California fliers.

Back Aircraft Co. to Build Big Factory On New Location in San Fernando Valley

AN INVESTMENT of between \$100,000 and \$125,000,000 is planned in accordance with the construction of a new factory for the Back Aircraft Co., according to a recent announcement of Paul H. G. Hoffman.

A large structure of Los Angeles based now is engaged in the expansion plans and has purchased a 300-acre site in the San Fernando Valley, north of Los Angeles, as a first step in the new program. The entire 300 acres will be developed as an aircraft landing field and manufacturing center, according to present plans. The Back company plans to occupy from 10 to 20 acres with a new factory by the end of the summer and have offered to develop the entire field at once as a municipal airport for the City of Los Angeles, pointing out that this area is free from fog and is clear to existing air lanes to the north and east than any terminal field now in operation.

Mr. Hoffman has stated that more than 60 aircraft or aircraft manufacturing have specified their willingness to locate their future activities at this field when it may be developed.



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Last Minute Briefs

The Air Service Corp. at Oklahoma City has been turned its charter. L. W. Parker, P. H. Mallin, and Lee H. Benday are representatives of the company, which is capitalized at \$5,000.

William Hammond, Curtiss pilot, is going to Portland, Me., to be field manager of the new airport being opened there as first in the East Coast chain at which the Curtiss company has an interest.

An aviation school has been opened at Reno, Wis., by Ted Lewis. Fifteen pupils attended the first day, it is reported.

The Month-Monah Airport has been taken over by the Paper Cities Airways Association, Newark, N.J.

Berry Brothers, Inc., Detroit, Mich., has issued the third edition of the company's pamphlet "Specifications for Aircraft Flying." The new booklet, 20 pages in length, very completely deals with its subject.

Commercial Airways, Ltd., of Regina, Saskatchewan, Can., has entered into a contract with the American Eagle Airways Corp. to distribute that company's product throughout Saskatchewan. The distributor was recently flown from the factory to Regina by Capt. F. S. Bacon of the Canadian company.

The Williams Oil Co. of Milwaukee, Wis., has purchased a Franklin D. Roosevelt plane to be used in making the campaign of the company sponsored, and enable the candidate to conduct their business trips by air.

Floyd Prudden, a pilot at Kelly Field during the war, and an expert of air mail transportation, has been appointed traffic manager of the Bachy-Ballou Co.

Limt. Col. H. L. Evans, head of the Quartermaster Corps, Post Hospital, Minn., is taking bids on an airplane tender for the landing field at the Summer White House at Duluth.

The town board of Three Lakes, Wis., has voted to build an airport at Three Lakes on a 30 acre tract. Work will be started at once.

Arbuckle Airways Co., Pine Bluff, Ark., has been incorporated with a capital stock of \$500,000 by L. Stewart and Felix G. Stewart and others of that city. The new company plans to develop a modern flying field.

The Sperian Aircraft Co., Tulsa, Okla., has let the contract to the Aerile Construction Co., Cleveland, O., to construct a one-story aircraft factory—250 x 300 ft.—to cost \$50,000.

A D. R. Navy contract for a large quantity of aviation goggles has been awarded to the Buck Distributing Corp. of New York City. The company's "Navigator" type of goggles will be supplied.

The Mid-Plane Sales & Transit Co. of Minneapolis has opened a branch office in the Marquette Building, Duluth, Minn. W. J. Miller is in charge.

Ben Barker of East Liverpool, O., admitted student of the Kaiser-Bach Flying School, has added to the company's personnel as assistant to Shirley C. Haddock who holds the position of operations officer.

Capt. Charles E. D. Collier and John Henry Stone ended on the Olympia June 26 with a Vespene engine Fordcraft on an aeroplane, the "New York" in attempt a round-the-world trip in the record time of 38 days. The first take off will be made in Harris, France.

The Kansas Flying School has been formed by the newly established South Star Airways Corp. of St. Cloud, Minn. Capt. Horace Haffel is president of the organization which has been capitalized at \$50,000.

In order to speed up production and give first class service to its customers the American Eagle Airways Corp., Kansas City, Mo., has begun the production of its own propellers, according to a statement issued by the company's officials.

Leads Air Products Co., New York City, has acquired a site along the River railroad between Washington and State Avenues, Oklahoma City, Okla., on which it plans the immediate construction of a plant. The company has also acquired a site on the corner of Floyd St. and Byrne Ave., Lawrence, Kan., where it will also construct a factory.

T. O. Ryan, president of the Ryan Aeronautical Corp., licensee and exclusive distributor in the United States for the Swensen-Ballou engine, has returned to San Diego, Calif., from an extensive tour of Germany, England, and France.

The air mail between Detroit and Cleveland are being operated by the Ford Motor Co. will be discontinued July 15. Mail routed out of Detroit over the trans-continental route will be flown Detroit on the night air mail plane operated between Detroit and Toledo by the M.A.T.

The Bachy-Ballou Co., Lincoln Airport, Cincinnati, O., has been named distributor for Monocoupe planes for Southern Ohio, parts of Kentucky, and all of West Virginia.

An Aviator goes to press. Two Dallas planes under the command of Major Madeline are visiting favorable weather at Vingo Bay, St. Petersburg, being asked out to attempt a rescue of the stranded group of the crew of the Ballou-Yahle, commander of the stricken craft was recently rescued when Lieutenant Leachman landed on the drifting ice, pulled him up and flew him to the base. Air Citta at Moscow. A second attempt to rescue the others who accompanied General Heber's party ended in a bad landing which partially wrecked the machine and wounded the pilot with one other. As yet no word has been received as to the fate of the Ballou-Yahle who started out to the rescue of General Heber several days ago and who has not been heard from since.

Walter Smith, pilot, Lee Cordie, co-pilot, and Amelia Earhart, passenger aboard the trans-Atlantic Pader monoplane "Friendship," sailed for the United States on the P.A. President Roosevelt from Southampton, England, Thursday, June 28.

Tim Hecks, former German aviator who plans a westward flight this summer is now at Cap de la Maladine, Quebec, Can., with her plane, the Helicon "North Star." It is reported that Max Baerle will start his over water flight from that point. The Atlantic goal is reported to be Berlin.

Pioneer Instrument Co. Develops Large

Type Altimeter for Use of Passengers

PIONEER INSTRUMENT Co. of Brooklyn, N. Y., has just completed the manufacture of a special altimeter which will be actually sold placed with a silver dial. This is the first of a new large type altimeter with a six inch dial and is intended to be used in the passenger cabin of transport airplanes so that the passengers may determine how high the airplane is flying. The first instrument, however, has been manufactured for the Pullman Company for installation in one of the Southern Pacific passenger cars.

Attracting the Passenger

Continued from page 22

advertising system, according to officials of the company. Each passenger is given a convenient envelope to show his friends. These envelopes contain the following articles: A stamped postal card to be mailed to friends, containing a picture of one of the airplanes, flying time, and the date; a card that the owner "had a ride in this plane—and here we see it was great! Really, you ought to go up!" a set of airplane stickers for automobile windows, stating that "We have flown at Lopez Field," a cloth of colored handkerchiefs, suitable for display; a card which enables the holder to save miles of extra flying to visit the another air



Showing one of the best specimens mounted above the entrance of the Champagne rooms at Lopez Field

trip is taken; and a circular giving complete information about the plane, flight, equipment, and of certified hours, and containing an aerial view of Indianapolis and vicinity at the field. This convenient envelope has arrived to reach Lopez Field in many other instances of Maryland, and is indeed both useful and easily available to take ride.

The company also has expended with Baltimore stores in arranging flights for purchasers of automobiles. For instance, a sales store advertised that, during a certain period, every purchaser of a automobile will be given a ticket for a free ride at Lopez Field. This plan is capable of being worked out in absolute proportion, according to those who have considered it.

The Monocoupe

Rapidly Gaining Public Acceptance



Price \$2675.00 at Wilson, Ill.

THE MONOCOUPES have always proven that it is "The Ultimate Plane for the Private Owner." Orders are being received by the score since our first announcement.

Our franchise has become the most rapidly sought and highly prized franchise in the aeronautical world today. It represents an exceptional opportunity for distributors to make big money.

This efficient cabin plane powered by the phenomenal new Valve Five cylinder, air cooled, radial engine, turns out twenty miles for each gallon of gas, cruises at 85 or does 100 miles an hour wide open.

The following is a representative list of distributors just now stepping out money-making franchises.

California: Los Angeles Monocoupe Aircraft Co., Marine City.	Illinois: Kansas City Monocoupe Aircraft Co., Marine City.
Florida: Miami W. H. H. Aircraft Co., 4111 N. W. 1st Ave.	Missouri: St. Louis Monocoupe Aircraft Co., 4111 N. W. 1st Ave.
Georgia: Atlanta Monocoupe Aircraft Co., 4111 N. W. 1st Ave.	Nebraska: Omaha Monocoupe Aircraft Co., 4111 N. W. 1st Ave.
Idaho: Boise Monocoupe Aircraft Co., 4111 N. W. 1st Ave.	Nevada: Reno Monocoupe Aircraft Co., 4111 N. W. 1st Ave.
Indiana: Indianapolis Monocoupe Aircraft Co., 4111 N. W. 1st Ave.	New York: New York Monocoupe Aircraft Co., 4111 N. W. 1st Ave.
Iowa: Des Moines Monocoupe Aircraft Co., 4111 N. W. 1st Ave.	Ohio: Cincinnati Monocoupe Aircraft Co., 4111 N. W. 1st Ave.
Kansas: Topeka Monocoupe Aircraft Co., 4111 N. W. 1st Ave.	Oklahoma: Oklahoma City Monocoupe Aircraft Co., 4111 N. W. 1st Ave.
Kentucky: Louisville Monocoupe Aircraft Co., 4111 N. W. 1st Ave.	Oregon: Portland Monocoupe Aircraft Co., 4111 N. W. 1st Ave.
Louisiana: New Orleans Monocoupe Aircraft Co., 4111 N. W. 1st Ave.	Pennsylvania: Philadelphia Monocoupe Aircraft Co., 4111 N. W. 1st Ave.
Maine: Bangor Monocoupe Aircraft Co., 4111 N. W. 1st Ave.	Rhode Island: Providence Monocoupe Aircraft Co., 4111 N. W. 1st Ave.
Maryland: Baltimore Monocoupe Aircraft Co., 4111 N. W. 1st Ave.	Tennessee: Nashville Monocoupe Aircraft Co., 4111 N. W. 1st Ave.
Massachusetts: Boston Monocoupe Aircraft Co., 4111 N. W. 1st Ave.	Texas: Dallas Monocoupe Aircraft Co., 4111 N. W. 1st Ave.
Michigan: Detroit Monocoupe Aircraft Co., 4111 N. W. 1st Ave.	Vermont: Burlington Monocoupe Aircraft Co., 4111 N. W. 1st Ave.
Minnesota: Minneapolis Monocoupe Aircraft Co., 4111 N. W. 1st Ave.	Virginia: Richmond Monocoupe Aircraft Co., 4111 N. W. 1st Ave.
Mississippi: Jackson Monocoupe Aircraft Co., 4111 N. W. 1st Ave.	Washington: Seattle Monocoupe Aircraft Co., 4111 N. W. 1st Ave.
Montana: Helena Monocoupe Aircraft Co., 4111 N. W. 1st Ave.	West Virginia: Charleston Monocoupe Aircraft Co., 4111 N. W. 1st Ave.
Nebraska: Omaha Monocoupe Aircraft Co., 4111 N. W. 1st Ave.	Wisconsin: Milwaukee Monocoupe Aircraft Co., 4111 N. W. 1st Ave.
Nevada: Reno Monocoupe Aircraft Co., 4111 N. W. 1st Ave.	Wyoming: Cheyenne Monocoupe Aircraft Co., 4111 N. W. 1st Ave.

MONO-AIRCRAFT, INC.

Builders of the Monocoupe and the Monocraft

Moline Illinois

is $D/A = 375/608 = 0.615$. Referring to Fig. 45 the d -loadable stress is 37,500 lb. per sq. in. The M is 37,500/3,608 = 10.36.

This completes the design of the main structural members of the tail surfaces. It is to be noted that in each case where a tube was designed by formula we used at least an 18 gage tube (.065). The reason for this is that whenever a control horn is fastened the load stress is very great and with a thin walled tube coming in will cause long before the full tensile strength of the tube has been realized. It is also preferable to add more steel than at the point of attachment of the control horns to prevent local buckling. An actual load test of these surfaces is desirable to insure a safe design.

Analysis of Control Systems.

The Department of Commerce demands that the supported members of control systems be analyzed. In addition they lay the following requirements for all control systems.

(a) Where a wheel is used, the wheel should have an average radius varying from 150 deg. to 300 deg. from the neutral position. The wheel diameter should be from 14 to 20 in. The distance from the wheel to the movement position



to the back of the pilot should be 14 in. and the forward load should be from 15 to 24 in. The height of the wheel should be such that it will clear the pilot's legs with the seat in highest position, so that the range of seat adjustment will not be limited. The rubber pads on large airplanes may have a radius up to 18 in. (b)

(c) The movement of the control surface should be not less than 20 deg. past neutral in either direction. In some airplanes it may be desirable to limit an upward elevator movement. There should be no interference between the surfaces or their bearing when one is held in the extreme position and the other operating through its full angular movement.

(d) All control systems should be provided with stops so that their movements will be limited by these stops rather than by mechanical interference. When possible, such a stop should be placed in proper relation to the control stick or column near the fulcrum, so as to limit the movement to the desired maximum in every direction. This will prevent the control from striking or bearing against the pilot's limbs or body in the event of a structural failure in flight or in a crash.

(e) It will also serve to protect the instrument and prevent jamming of the stick behind other controls or instruments.

(f) The maximum pull on the stick that one normally is applied by a pilot in flying position is assumed to be 200 lb. The stick should be designed to withstand a pull or pull of 200 lb. in a fore and aft direction and a force of 150 lb. in a lateral direction. The stick should be made of non-ferrous material, unless the position of the compass is such that the use of a control stick of ferrous material would not cause deviation of the needle. A steel control should be designed to withstand a force of 300 lb. fore and aft, and a force of 250 lb. applied tangential to the rim of the wheel.



Tail-Mark Registered

Craftsmanship

In this age of mass production, the beauty and durability of old time craftsmanship is still prevalent in the mohair fabrics produced by The Shelton Looms.

The manufacturing resources and experience of this organization, one of the largest in the industry, is at the disposal of manufacturers who desire a wide variety of mohair fabrics for upholstering the interiors of airplanes.

The Shelton Looms

335 Fourth Avenue,
New York, N. Y.

TRADE MARK for authentic AVIATION

"The rubber bar or pulley should be built to withstand a force of 300 lb. applied at the point of contact with the foot."

(a) The movement increments of the control surfaces should correspond to the movement of the controls.

(b) The part of the control system which is between the stops and the control surface should be designed to withstand 185 per cent. of the loads specified in Table 17 of Chapter 34. The parts between the stops and the pilot should be designed to withstand the loads specified in paragraph (d). One should be concerned in the design that friction is not excessive as it is a nuisance. Properly designed ball cranks, carefully hung pulleys, and on large airplanes, the use of ball bearings will aid in this.

(c) Unless the design of the control surface hinges is such that the possibility of a failure is very remote, at least three hinges should be used on each surface.

There are the main points that should be borne in mind in the design of a control system. The design of the control stick is governed by the 300 lb. applied in a fore and aft direction. This is a very serious load and unless the stick is made very stout it gives a very great design moment. We will assume that our stick is 20 in. long from the center of the hand grip to the point of attachment of the elevator control wire. The moment is then $300 \times 20 = 6,000$ in. lb. To carry this moment with a reasonably small diameter we will have to use a chrome molybdenum alloy. A 2 - 3/4 - .065 tube will do it.

$$S = \frac{300 \times 1,570/2}{.0773} = 9,600 \text{ lb. per sq. in.}$$

The allowable load for chrome molybdenum is 96,000 lb. The M of the tube is 96,000/9,600 = 10.00.

The rubber bar is designed in exactly the same manner if it is to pure bending. Some rubber bars are in bending and tension at the same time. These may be designed by the method illustrated in the last few paragraphs of Chapter 5 in which an actual illustration was worked out.

Table 9 of Chapter 4 lists the strengths of control cables. The flexible or extra flexible cable is used for control. When large curves are unavoidable, the extra flexible cable should be used. In our case it will be assumed that the cable travel should straight and so we will use the flexible 3 x 7 cable.

In our analysis of the rubber pad we found that the rubber had a load of 202.5 lb. acting 22 in. back. Its moment is $202.5 \times 22 = 4,455$ in. lb. This design a cable we must increase the load 25 per cent. This is $202.5 \times 1.25 = 253.125$ in. lb. We will assume we have a few such lines attached to the rubber pad and the control cable. The design load on the cable is then $253.125 \times 6 = 1,518.75$ in. lb. From Table 9 we see that a 3/32 in. cable is satisfactory. The M is 600/1,518.75 = 1 = 41.

The elevator has a load of $15 \times 34 = 510$ lb. acting 72 in. back of the first stop. This is a moment of 36,720 in. lb. Increasing it by 25 per cent. to obtain the design moment we have $36,720 \times 1.25 = 45,900$ in. lb. Using a 3 in. horn once again the design load on the cable is $45,900/3 = 15,300$ in. lb. Once again a 3/32 in. cable is satisfactory. The M is 500/15,300 = 1 = 52. Try good design we will incorporate our stop at the fulcrum of the stick at the Commerce Department. Our ball control system is thus fully designed.

The elevator control system is analyzed and designed in exactly the same manner as the tail surfaces. If a torque rod control is used a tube must be selected that is strong enough to carry the torsion moment. These systems are ones that have been used but they are more positive and easier to keep in repair.

The safety of an airplane is so closely tied up with the

The Airsedan



For The Discriminating Purchaser:

THE AIRSEDAN

AIRLINE OPERATORS will find this plane meets with all their requirements. The cabin has exceptionally comfortable seats for four large passengers and the pilot's visibility is unexcelled.

PRIVATE OWNERS will approve of the fine appointments which are selected to satisfy the most critical taste.

CORPORATIONS desiring to keep up with the progress of the times will find that here is an efficient and up-to-date vehicle for transporting executives and personnel to widely separated branches.

We will be glad to assist you in determining the adaptability of this fine product to your requirements.

BUHL AIRCRAFT COMPANY
Maryville Michigan



Don't economize on instruments

At all times the pilot needs an accurate, dependable motor heat indicator. It would be poor economy for him to use an instrument that gives other than the most reliable information on motor performance.

When in the air it is an excellent thing to hold fast to the maxim, "The best is none too good." That has always been the rule of this company in manufacturing motor heat indicators.

The Boyce MotoMeter, Advance Type is designed and constructed to furnish exact information regardless of atmospheric conditions or altitude of plane. We could make them cheaper . . . at a sacrifice of reliability . . . but we won't.

Model No. 2 gives full details.

THE MOTOMETER COMPANY, INC.
2 W. 4th Ave., Long Island City, N. Y.
The Standard Oil Co. is the exclusive agent for
Standard Oil Co. of New York, New York, New York

Boyce MotoMeter,
Advance Type, made
entirely of metal,
resistant to rust,
and dependable.



BOYCE
MOTOMETER
MADE IN U.S.A.
U.S. PAT. OFFICE

TRADE MARK FOR ADVANCE TYPE

strength and proper functioning of the control system that extreme care should be taken in its design. Wherever possible the first plans in which a newly designed control system is incorporated should be tested and tested before flight. It is not necessary to lead to destruction. A good loading of 40



per cent of the design load may be met. If so part of the system details under this load it may safely be assumed that it is satisfactory.

Design of Tail Skid.

In the analysis of the three-point landing condition, Chapter 19 the load on the tail skid was computed to be 225 lb. Multiplied by the load factor for this condition of 4.5 we have $225 \times 4.5 = 1012.5$ lb. This acts at a distance of six inches from the fulcrum as shown in Fig. 32. The moment is $1012.5 \times 6 = 6075$ in. lb. A $1 \times \frac{1}{2} \times 120$ in. solid carbon (1045) steel tube will be strong enough to take this moment.

$S = 32/yI = 8778 \times 35/12476 = 25,000$ lb. per sq. in. The allowable stress for 1045 steel is 55,000 lb. The M. S. is $54,000/25,000 = 2.16$.

The tail skid is reinforced six inches above the fulcrum by $\frac{1}{2}$ in. diam. aluminum rods. For 300 per cent elongation the rods will carry 220 lb. per strand. This is found from Fig. 67 of Chapter 19. The load on the skid six inches above the fulcrum is $6775/6 = 1129.2$ lb. The number of strands required is $1129.2 \div 220 = 5.15$, say 6 strands to maintain an even number.

The Eastman Flying Boat

Continued from page 30

upper wing are semi-elliptical, those of the lower being rectangular. The wings are covered with Dacron fabric, and finished with six coats of clear and one coat of pigmented varnish dope. Externally, the wings are treated with chrome molybdenum steel tubing struts, streamlined with fabric, an aluminum or steel tubing being required internally.

The hull is framed with a structure of spruce, oak and ash, a set of frames made of spruce being located where the stresses are low and ash where they are high. The step frame is made of oak, and the hull of oak ribs and oak stringers. Interlongitudinal struts were used in constructing the hull's

bottom. The skin of the hull is duralumin, of varying thicknesses, depending upon the stresses, and joined to girders with duralumin bolts.

It was decided to use bolts actively as the whole structure instead of rivets, due to the tendency of rivets to expand the metal around their heads, with the possibility of having a leaky hull. The hull is finished inside and outside with Barry Brothers Linoleum, and painted with varnish. It is estimated that the bottom of the hull is built strong enough to permit emergency landings on the ground with virtually no danger of damage.

Moving already has been made of one of the boat's main wing features, i. e., unusually large control surfaces. The



Flight picture of the Eastman flying boat powered with an 80 hp. Anzani.

reference on the Eastman flying boat extend the full length of the upper wing but are of conventional construction and attachment.

Tail surfaces are attached by means of a duralumin tube outrigger, similar in principle to the XO boom, which first flew across the Atlantic Ocean. The reason for this new direction, Mr. Eastman said, was to make possible the placing of the tail surfaces as far as possible behind the wings, eliminating all seriously long and heavy hull. The tubes in the outrigger are 2 1/2 in. in diameter. Side by side dual wheel struts are associated into the outrigger. The struts are adjustable on the ground.

The boat is equipped with a removable side, and a jolly of which, which can be situated in a few minutes, enabling the craft to cross out of the water under its own power or to be towed on a barge. A water-coupler is fitted in the stern part of the hull, and connected to the rubber hose which gives it a degree of control in the water equal to that of an ordinary water boat.

Powered With an 80 Hp. Anzani Engine

The hull is powered with an 80 hp. six cylinder, radial, six model Anzani engine, mounted on an ordinary mounting bar and dismounted in the water section. The engine mount and outer section consists of a cast aluminum of chrome molybdenum steel tubing, the water section being duralumin to complete the wing section above the water. A 25 gal. gasoline tank, of welded aluminum construction, is located in the water section with gravity feed to the engine. A three gallon aluminum tank of fuel built into the engine mount forward of the gas tank. Ignition is furnished by two Bosch magnetos, and spark timing is obtained by use of a booster magnet. The exhaust is manifolded and carried over the top of the water section to the landing edge, making the engine virtually quiet. The boat is equipped with a Marconi radio, 7 ft. 8 in. in length and having a peak of 40 ft. The usual assortment of instruments are included in the equipment.



A whirling propeller ... respects no person

THE man who "knows" airplanes, stays clear of a whirling propeller. Current conditions, however, will cluster about a 'plane being warmed-up — heedless, in their curiosity and enthusiasm, of the danger of getting too close.

Flying field visitors must be protected against their own thoughtlessness. Accidents undermining public confidence in aviation.

Mark a safety zone with an Anchor Chain Link Wire Fence and restrict visitors to this area. Anchor Fences are available in all heights and types for every need. Everlasting service is insured by the Exclusive Anchor Features: (1) U-bar Line Posts. (2) Square Terminal Posts. (3) Drive-Anchorage. (4) Wire-Weld Guts.

Anchor Nationwide Fencing Service places fencing specialists and trained erectors at your disposal. Phone or write the nearest Anchor District Office for complete information.

ANCHOR POST FENCE CO.
KANSAS AVENUE AND 10TH ST., KANSAS CITY, MO.
Albany, Boston, Chicago, Cleveland, Denver, Detroit, Houston, Indianapolis, Los Angeles, Memphis, L. I., Newark, New York, Philadelphia, Pittsburgh, St. Louis, San Francisco, Springfield.
Representatives in other principal cities.



TRADE MARK FOR ADVANCE TYPE

mounted directly to the stern, eliminating any visible keels or keelsons. The stern is deflectionally strong, having an upward angle of 30 deg and a down ward section of only 30 deg. The elevator is controlled by two cables connected to the stick mechanism. In construction the control surfaces are of metal covered with fabric. The stern has side struts and a short strut on each side of the fuselage supports the elevators, which are built in one piece being a complete take running the length of the main spar. The fuselage streamline runs below all of the fixed tail surfaces to each edge.

The landing gear is of the divided type with a full floating axle, using a rubber shock chord. The lowering of the landing gear is completely rapid with only a few seconds for each wheel. This member is an extension of the axle which is a fitting standard below the fuselage and wrapped with shock absorber chord at a point near the wheel. It is of the full floating type and resembles closely the through type landing gear. To the rear members of the landing gear frame, a light hole is added, providing a step which facilitates access to the cockpit. The landing gear is carried well forward, relieving the tendency to nose over as well as increasing the load on the tail skid. The tail skid is of the full floating type supported by rubber shock in tension. The tail skid itself is of steel with a metal shoe.

According to the manufacturer, the Chumney has an exceptional performance. It is stated that if the nose is pulled up into a stall, it will drop and the plane will resume a gentle climbing angle without touching the controls. The man-

ufacturer goes on to say, "It has hands off the controls even in rough weather and does not pitch; it merely rises and falls gently. It lands easily and easily with pitching, yawing, or rolling even in gusty weather, which is a great advantage for training. The controls are proportioned so that the student does not have the tendency to over-control it. In flight tests this plane has repeatedly had the engine slowed and allowed to idle but by holding the elevator up. While these demonstrations with full load the plane can be turned from side to side with rubber and rolled with the elevator and be made to pitch back and forth with the elevators. All controls give instant response in the practice as well as all other speed during flight."

The Taylorcraft Aircraft Co. is planning to manufacture these planes in quantity and is equipping its shops to get into production at a very early date. Most of the jobs and fixtures are now complete and it is expected that production of one plane a week will be started by the first of July. One plane every two weeks in the present rate of production.

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Dependable load 350 lb.
Gross weight 3500 lb.
Wing loading 8.57 lb./sq. ft.
Power loading 25.15 hp./sq. ft.
High speed 179 mph.
Landing speed 38 mph.
Cruising speed 100 mph.
Climb 556 ft./min.
Fuel capacity 30 gal.
Range 500 mi.
Fuel consumption 9 gal./hr.
Take off with full load 9.10 sec.
These figures are stated to be accurate within 5 per cent.

The Radio Equipment of the "Southern Cross"

Continued from page 27

eight her magnets clamped in the sides of the present and transmitting in pole pieces near the poles.

These magnets could be connected independently to the plane's lighting system or to either of the sending sets. The voltage to be taken off came was adjusted, raised, and lowered could supply several voltages, such as proper current for the wing lights, at six volts, and for the searchlight 32 volts, at the same time. The two magnets supplied, with perfect accuracy, 180 watts of current each, and dynamic control taking full note of variations in the line



The antenna reel and antenna amplifier

voltage. All the power output could be concentrated in the filament of the plane's searchlight, in the generators could light the winglights and the instrument panel without any going the current supply for the radio set.

Obviously, one generator was used for the lights and the other used to heat the filament of the transmitting tube and to supply power to the plane's transmitter supplying high voltage current to the plate of the tube. A power factor condenser which could be placed across a section of the plane's transmitter would raise the power factor of the system to 80 or 90 percent.

The antenna section of the sending set was Ray's latest modification of the well known metal grid antenna element, with fixed air dielectric plate condenser and variable condenser grid condenser. The calculations were of aluminum tubing. All components of the set were treated against crystallization from vibration by brine solution despoison whenever there was any vibration stress. The set had one

HELPING BUILD AVIATION

ANOTHER vital connection has been added to aviation's engineering structure by the development of Aerol (Chloroprene) Struts for landing gears. No other product has so treated the danger and discomfort of landing and has made possible the control of landing shock and its attending maintenance cost.

The still more recent development of a shock absorbing tail skid also makes available for the first time efficient shock cushioning at all three points.

An illustrated booklet on Aerol Struts will be sent on request.

CLEVELAND PNEUMATIC TOOL CO.
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Also manufacturers of Guns and Wrenches, Air Sprays for Buses, Trucks and Automobiles

Edo Pontoons and the Ryan Brougham

THE Ryan Brougham, the ship made famous by Lindbergh and many popular by its own merits, has now proved its quality as a Seaplane. And what a Brougham! With an exceptionally great take-off and with the usual superior performance of the Brougham, easily offset by the weight of float, it became a natural leader in the class of Wings against other Seaplanes.

With its successful performance the Ryan Brougham Seaplane machine then, with its outstanding material for successful work. Two sets of floats of the fuselage, in conjunction with the end sets of floats, provide very comfortable seats for passengers going in or out. Landing shock at the rear and at the nose allows the ship to be brought close



to a beach, again making embarking and disembarking more comfortable.

Edo straight sided floats make rising very easy, and this is an important feature in Seaplane operation. Good seaplanes are carried by large diameters of the floats, giving greater buoyancy of 100%. High location of the wing allows the Brougham to be brought forward in its naturally high hook, rise or bump like a water boat. Both of "Albatross" and "Albatross" float

the front float, cushion and support on a wet wing, then through the Seaplane to be secured in open and sheltering all the trouble of frequent landing which would hinder operation.



EDO AIRCRAFT CORPORATION
CHICAGO, ILL., U. S. A.

STANDARDIZED ALL METAL SEAPLANE FLOATS

AIRPORTS AND AIRWAYS

Armonk, N. Y.

The newly completed field at Armonk, N. Y., in the heart of Westchester County, is now operating at capacity, according to latest reports from the air-minded citizens of Westchester.

This privately owned airport is one of the most completely equipped ports in the East. Its close proximity to White Plains makes it the aviation country's first air mail station.

The latest addition to the fleet at the airport of the Tarrant Airways, operator of the field, is a Stinson biplane.



Tarrant Airways, Inc., operates the airport at Armonk, N. Y., equipped with a Whorlwind engine. This plane affords the steady travel, which greatly saves the opportunity to take a joy hop in a Whorlwind engine plane.

The aviation school connected with the port also is turning in good reports. Several of the 25 students are serving as the honor of being the first graduates.

Burrell Airways, Inc., is the Westchester agent for Stinson and Stinson planes.

Bureau Master J. L. Berry, reports that he has many visitors on the basis for aerial photographs and on many days the Airways photographer, ex-Chief Petty Officer "Jack" Hall, U. S. N., can be seen working over Westchester. According to Chief Pilot Terhoffer it won't be long before every field in Westchester will have had its picture taken.

Glen Falls, N. Y.

Dedicated some weeks ago in Floyd Bennett Field, the airport here is now seeing much activity. Plans are afoot by Fred A. Borge, manager of the airport. The field has been developed and is being maintained by a special organization under the direction of the Airport Development Committee of the local chamber of commerce.

Several weeks ago, Major James, Department of Commerce inspector, flew here, and after a thorough report on presented the airport as one of the best-informed and equipped of fields.

The Glen Falls site was first used in 1922 by Kaye A.

by, who was later killed. From 1922 to 1927 it was a private field, being owned and operated by Captain Ross who, who still owns the property. The local chamber of commerce now has a five year lease on the airport, which is free to all others.

Garden City, L. I., N. Y.

By M. Jones

George Henderson, who was Earl Elder's pilot when the stricken ship, the Albatross, left, spent a day at Garden City recently. He flew from there to a Stinson. Another famous pilot who was a visitor on the same day, was Bertie Johnson. Johnson frequently brings the tri-motor Ford which he flew with on his forthcoming Atlantic trip, to Garden City for fuel.

A Caproni, Curtiss plane, recently flew a new Whorlwind Fordfield to Seattle, Wash., with several passengers. The Nassau County American Legion Unit will take place at Garden City on July 8.

A recent field at the House at Roseton's Field attracted much attention, when the world's first was demonstrated. The wheels were driven up during flight, and the speed of the plane was thereby increased. E. J. Clark, manager of the Roseton Flying Field School, was forbidden by the Department of Commerce to fly his plane for a day or so, because he had failed to provide himself with a pilot's license. Fred Stone, well-known pilot, was frequently the son of Roseton's field, where he keeps his Ford and his plane. Lieutenant Kitzberger, school cadet, was also student, Charles B. Cooper. After taking the plane around a field and landing at six times, Miss Cooper sailed out of Garden City, flew to another field three miles distant, made a number of landings, and returned. She hopes soon to obtain her private pilot's license, and is anxious to demonstrate her knowledge of aviation to the public.

Bill Hammond, former pilot, school Barclay Warburton, George Hayward and Rhodes Warburton, who is taking the course in navigation, flew with Hammond from Philadelphia to Garden City as a President on a cross-country navigation flight. Warburton captured the prize.

Hammond will now go to Portland, Me., as field manager of the flying field. The flight is opening them. E. Clark will go with him as chief of the mechanical department. An entire pilot, he is scheduled later, will also be scheduled at the field, and possibly John Adams will go as mechanic.

Springfield, Mass.

By Charles James Gale

Free Ryan biplane for which the Massachusetts Airways Corp. of this city is the New England Airways has been offered in addition to the one already received in May, it was recently announced. One of the planes ordered has been sold.

Five students trained recently by the company school. Robert Eagle of North Berke, Robert H. Eclair of this city, Ray Spies of this city, Bruce Linscott of Norwell, Conn., and Leonard Power, mechanic of the corporation. Sixteen students are now taking instruction at the Academy field.

More than 30 men have enrolled in the ground school course being conducted here by Gregory A. J. of the North Berke, Southern Ground. This is an instruction in outdoor sport practice and was authorized by high officers in Boston Land.

July 2, 1928

Harry Dupont of the Interstate Airways of this city and Montreal is landing the subjects.

The financing of the Aqueduct Airport project for Springfield which is being sponsored by Congressman Henry L. Burton got under way recently at a meeting of the Flying Club of Springfield and the airport board at the Niagara Club. The group is following its purpose to assist the project in every way possible by participating in the campaign to raise money for purchase of the land before the option expires in September.

In the meantime the Pink Pike Airport project for this city is being pushed in early campaign. Two stone slabs have been at work and a total of 30 trucks have been carrying the material to the station to be graded. Slabs have been seen on the Pink Pike representative and it is expected the field will be ready for a dedication on next week July 6.

John Napier, now pilot for the Massachusetts Airways, is in charge of the Westfield Airport is representative of the local group which has the management contract. He is expected to have his plane being constructed and a number of others about ready to start. Local. Earl Hall also approved the Springfield Ground School here last winter, is in charge of the repair shop there.

Archibald Johnston, former captain in the Army air service and manager of the Lafayette Aerodrome, has joined H. House Broker and Lowell Taylor in flying for the Eastern States Aircraft Co. of Philadelphia and its parent company, the Pennsylvania Airport Corp. of this city. His Army experience included instruction at Langley and Wright fields during the war and the author of six biplane records of the war was annual. He is flying at Portland now but will be transferred to the city, it is said, when the Pink Pike Airport is opened.

Worcester, Mass.

By Harry T. Ford

Trans-Albion and trans-Pacific flights have been mentioned in reports in this section as a show by the crowd which took in Whitcomb Field, the Oxford Airport, and Worcester Flying Field early Saturday afternoon, Sunday, and Monday.

Whitcomb Field in the house of Worcester authorities and P. H. Bennett, president of the New England Aircraft Corp., owner of the field, reports that business is improving with each passing week. A statement was then given to the Sunday in which Bennett, Lowell, Davis, R. McWilliams, Capt. Walter Berry, Capt. "Rudy" Barrows, "Red" Clark, and other pilots take part. Walter Johnson also has been doing his parachute jump, often rising from the ground as a part of the show. Passenger carrying business has been good, according to the wing writer, and an average of 70 customers on good Sunday has been maintained. There are now 25 students in the flying school.

The Oxford Airport is being operated by the Worcester Flying Club as a passenger carrying airport and the club pilot, Fred Dwyer, has been making morning carrying passengers on their first air trip.

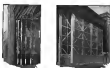
The Boston Field is being operated by the Bay State Flying Service of Boston maintaining its operations for the present to passenger business. It is planned to start a school to meet as a large base and house can be considered.

The Worcester Society for the Promotion of Aviation will incorporate under state law for \$10,000. More than \$1,000 has already been raised for the purchase of a plane.

Ocean City, N. J.

Having been granted the exclusive flying privileges for operations on the Ocean City Beach, Harry Kelly of 125 E. 12th Ave., Collegewood, N. J., and Charles Allen of 15

AVIATION



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Smoothly and sweetly the Wright
Whirlwind motors crackled their
staccato song in the quiet morning
air. The

From the New York Times
account of the take-off of Miss
Earhart, Wilmer Stultz and
Lou Gordon from Boston
Harbor on the first leg of
their trans-Atlantic hop.

THE Fokker Tri-motor Seaplane "Friendship" which carried Miss Amelia Earhart, Wilmer Stultz, Pilot, and Lou Gordon, Mechanic across the Atlantic from Trepassey Bay, N. F. to Burry Port, Wales was powered with three standard 200 h. p. Wright Whirlwind Engines taken out of regular commercial stock. Fifteen of the twenty hours and forty minutes of the "Friendship's" flight were done by instruments in a blind fog against rain, wind and snow, a combination of flying weather that pays tribute to the skill of the crew, the stamina of the plane and the dependability of the Whirlwind Engines.



Wade World

—and "smoothly and sweetly" they "crackled their staccato song" to the Atlantic's roaring chorus of snow, rain and wind that drove at Miss Earhart's plane — the *fifth* Wright Whirlwind powered ship to successfully span the North Atlantic route.

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